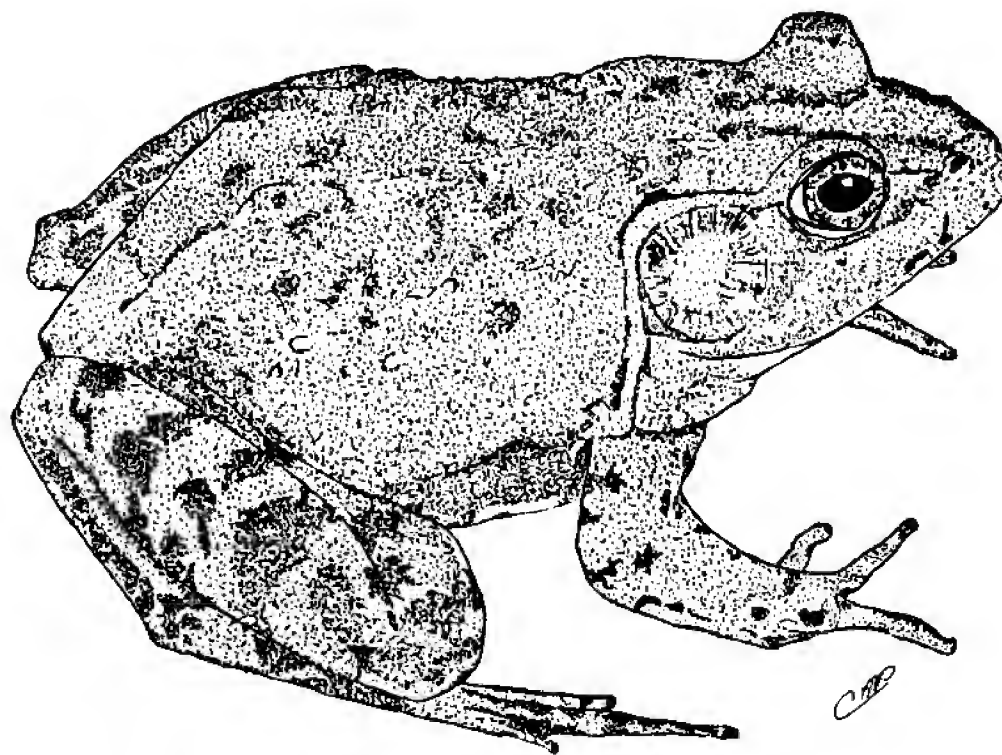


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JOURNAL INFORMATION

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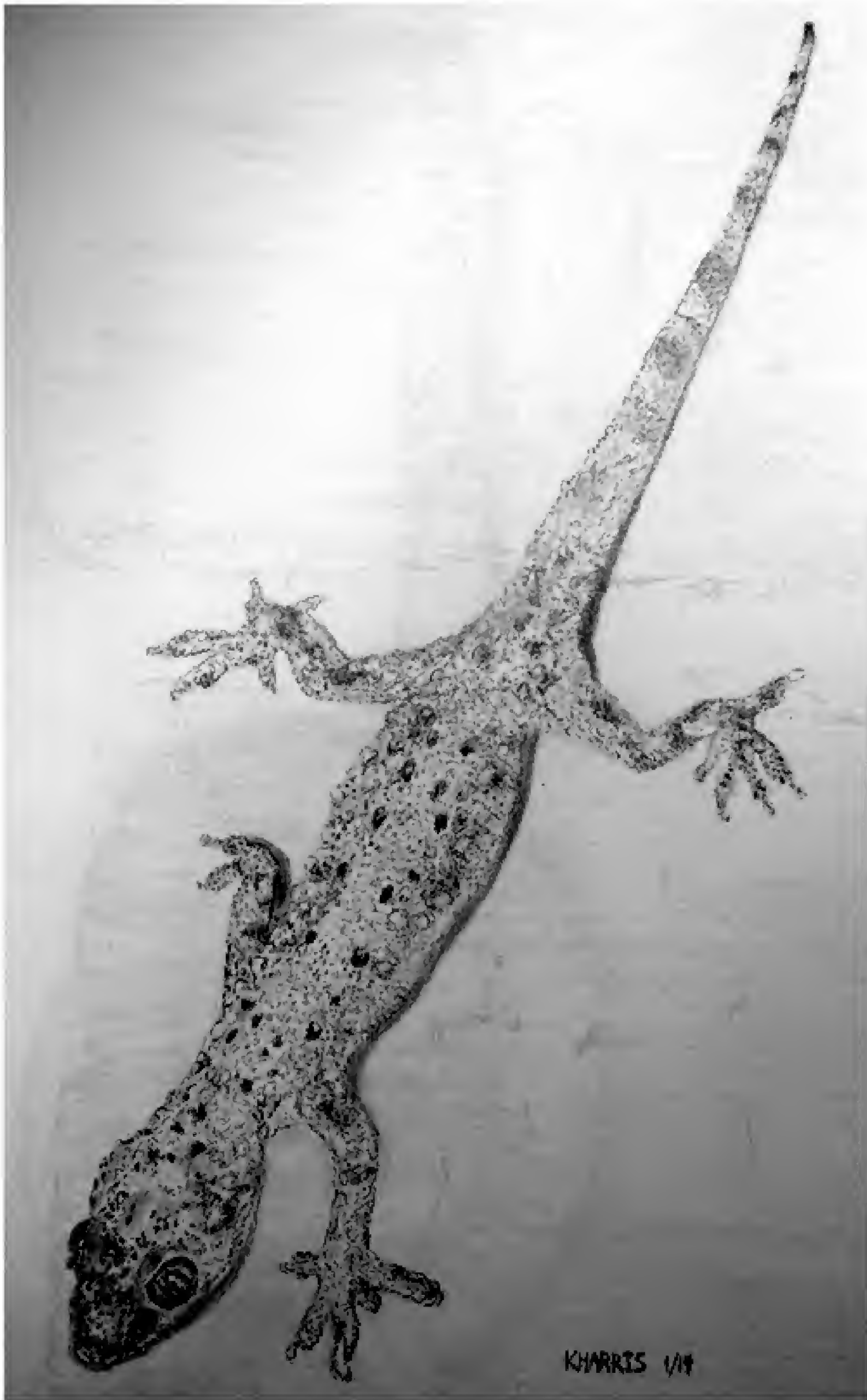
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Amphibian and Reptile Survey of Westmoreland State Park

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Introduction

The VHS annual spring meeting and survey was held at Westmoreland State Park on May 8-10, 2015. Westmoreland to our knowledge has never been surveyed so it presented an ideal place for the VHS to conduct a survey. The park is located in Westmoreland County and is bordered to the north by the Potomac River and all sides of the park are surrounded by private land holdings. Westmoreland State Park is one of the six original state parks formed in Virginia. It opened its doors to the public in 1936. Many of the trails and other features of the park were constructed by the CCC in the early 1930's. The park comprises 530 hectares and has many well maintained trails and many kilometers of beach along the Potomac River. There is a diversity of habitats from brackish marshes, freshwater wetlands, streams, ponds, and mature hardwood/mixed hardwood forests. This park lies within the coastal plain physiographic province. The rise and fall of sea level over millions of years deposited many layers of fossil containing layers of sediments. Visitors can enjoy collecting fossils along the several kilometers of beach where the Potomac River has carved into these fossil-containing sediments.

Study Sites

Westmoreland State Park was divided into 10 distinct survey areas. The characteristics for each area and a GPS (Google Earth) reading at a central point in the area are presented below. Figure 1 is a map of the state park showing the 10 survey areas.

Site 1 (38°10'13.92"N, 76°52'41.78"W)

This site has a mixture of wetland ponds and upland mixed hardwood forest. Steep banks at the edge of the wetlands area transitions into an upland mixed hardwood forest with species such as Chestnut Oak, Red Maple, American Holly, and Mountain Laurel. Many downed trees were observed everywhere in this site due to the effects of hurricane Irene in 2011.

Site 2 (38° 09'57.23"N, 76°52'30.21"W)

This site included Rock Spring Pond Road, Rock Spring Pond and the surrounding forest. The forest is mostly upland hardwood; dominant canopy species include the Tulip Poplar and American Sweetgum. Laurel was the dominant plant in the understory. An intermittent stream followed the road and ran into Rock Spring Pond. *Sphagnum sp.* moss covered a large area where the stream met the pond.

Site 3 (38°10'2.78"N, 76°51'42.52"W)

Site 3 included the Beach Trail, beach rip rap habitat, the edge of a cliff and an upland mixed hardwood forest. The dominant species of tree included American Sweetgum, American Holly, American Beech, and Pines. As in other sites there were many downed logs. This site also had a lot of edge habitat and buildings.

Site 4 (38° 09'51.89"N, 76°51'31.26"W)

This site followed Big Meadow Trail. The trail follows a ridgeline with steep banks on either side of the trail. The north side of this site follows a steep bank away from the trail and merges with the Potomac River. The forest consists of hardwoods including American Beech, Paw Paw, and many Oak species. The south side of this site included a marshy habitat which created a margin around a meandering creek. There are many wet areas and springs on the south side of this site. At the most eastern side of this site is a boardwalk crossing through a tidal marsh.

Site 5 (38° 09'37.89"N, 76°51'22.68"W)

Several trails cross through this site. Turkey Neck Trail is hilly and has a hardwood forest with many downed trees. The forest surrounding this trail also has Mountain Laurel thickets and lots of American Holly. The eastern section of this site included the end of Turkey Neck Trail and a small section of Beaver Dam Trail. Several features occur on this portion of the site including an upland mixed hardwood forest with many downed trees and a swampy, marshy area which turns into a stream.

Site 6 (38° 09'35.71"N, 76°51'38.88"W)

Site 6 has several interesting features including a marshy area, a mixed hardwood forest, and many cliffs and ravines.

Site 7 (38° 09'27.84"N, 76°51'52.78"W)

One part of this site was a timbered area with new-growth forest. Traversing this area were old logging roads. In one section there is a wood processing area with many wood piles and scrap logs. A second section of this site has a steep ravine with many springs forming a perennial stream. Surrounding the stream is a mature hardwood forest with American Beech, Tulip Poplar, Ironwood and an herbaceous layer of Lizard's Tail, Japanese Stilt Grass, Sensitive Fern and other fern species.

Site 8 (38° 09'6.15"N, 76°51'16.59"W)

The northwestern section of this site was a swamp surrounded by a mixed hardwood forest. Many trees had been downed by beaver activity. The northeastern section is an expansive wetlands with lots of beaver activity. The center of this site is an upland mixed hardwood forest bounded by a wheat field. The southwest corner has a small stream at the base of steep ravines.

Site 9 (38° 09'27.31"N, 76°52'29.90"W)

The western section of this site is an open field with debris from past timbering. Scattered around is some metal debris. A mixed hardwood forest surrounds the field. The eastern section of this site was a steep ravine with a mixed hardwood forest.

Site 10 (38° 09'42.74"N, 76°52'24.46"W)

There is a diversity of habitats on this site. Rock Spring Pond is a major feature. North of the pond is a wetland meadow with a meandering stream. The soil in this wetland is very spongy with lots of *Sphagnum sp.* moss. Surrounding the pond is a mixed hardwood forest. Another section of this site has a power line right of way and a maintenance area. Around this area is a lot of stone, wood, and plastic debris.



Figure 1. Map showing survey 10 surveys areas.

Materials and Methods

On Friday 8 May 2015 several survey participants placed hoop turtle traps, baited with sardines, at two locations. Two turtle traps were set in Rock Spring Pond and one turtle trap was put in the tidal marsh at site 4. Leading up to the survey Kory Steele divided the state park property into 10 distinct areas. On Saturday 9 May, survey participants were divided into 8 groups. On Sunday survey participants were divided into 2 groups. Once at survey sites, methods used to find animals included hand capture, visual observation, listening for calling males, flipping over cover objects, and dipnetting. Rare animals and animals with signs of disease or injury were photographed. Group leaders filled out survey data sheets to record all animals encountered. Survey data sheets include information on the physical environment, weather, animal health, and microhabitat. Other data collected included morphometric measurements of rare species, age, and sex.

Table 1: The amount of survey effort per research site.

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10 (Sat)	Site 10 (Sun)
Number of surveyors	11	11	9	9	6	9	13	7	9	5	10
Hours surveyed	3.5	2.5	5.5	5.5	5.5	5.5	2.3	5.5	5.5	5.5	3.5
Person hours of survey effort	38.5	27.5	49.5	49.5	33	49.5	29.9	38.5	49.5	27.5	35

Results

The survey yielded a total of 33 species (10 anurans, 4 salamanders, 5 turtles, 4 lizards, and 10 snake species). A total of 550 animals were either seen or hand captured during the survey weekend. The most commonly collected amphibian was *Acris crepitans* and the most frequently found reptile was *Carphophis amoenus amoenus*. One Eastern Red Salamander was found missing an eye. This was probably due to an injury not a malformation. A few *Anaxyrus americanus* and *Lithobates palustris* were found parasitized by chigger larvae, and *Plestiodon fasciatus* and *Sceloporus undulatus* were found with tick parasites. There were no new county records reported for the survey.

Table 2. Summary of the number of animals observed at each site.

Sites	1	2	3	4	5	6	7	8	9	10	10*	Total
Species												
Amphibians												
<i>Acris crepitans</i>	20		1		3	1	10	4		6	10	55
<i>Anaxyrus americanus</i>	1	2	1	1	2		12	5	11	5	4	44
<i>Anaxyrus fowleri</i>	3			1	5	5		6				20
<i>Hyla chrysoscelis</i>	4	2	3	1	3	3	3	6	1	1	1	28
<i>Hyla cinerea</i>	2							1		1		4
<i>Lithobates catesbeianus</i>								1			1	2
<i>Lithobates clamitans</i>	23			1	3	4		5		5	2	43
<i>Lithobates palustris</i>		4					3	2		5	3	17
<i>Lithobates sphenoccephalus</i>	1											1
<i>Pseudacris crucifer</i>		1	1	1		1						4
<i>Ambystoma maculatum</i>	1L				1							2
<i>Notophthalmus viridescens v.</i>		1					1		1			3
<i>Plethodon cinereus</i>	1		17	2				2				22
<i>Pseudotriton ruber</i>										1		1

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Reptiles												
<i>Chelydra serpentina</i>				1						2		3
<i>Chrysemys picta p.</i>										11		11
<i>Kinosternon subrubrum s.</i>	1			1								2
<i>Sternotherus odoratus</i>										1		1
<i>Terrapene carolina c.</i>	2	2S		2,1S	1,1S		3,1S	2,1S	2	1	4	17
<i>Plestiodon fasciatus</i>	12	6			5	5	5	6	3	7	15	64
<i>Plestiodon laticeps</i>	4		2	5	2	2	1					16
<i>Sceloporus undulatus</i>	5	1	4	2	3	4	2	1	1	5	1	29
<i>Scincella lateralis</i>	1	1		2		1	2		1	1		9
<i>Carphophis amoenus</i>	17	12	2	7	15	4	11	5	18	10	5	106
<i>Coluber constrictor c</i>	1			2	3		1	2	1	1		11
<i>Diadophis punctatus</i>	3				3						1	7
<i>Lampropeltis getula</i>			1									1
<i>Nerodia sipedon</i>								4		5		9
<i>Pantherophis alleghaniensis</i>					1				1		1	3
<i>Storeria dekayi d.</i>		1		2			2		2	1		8
<i>Thamnophis sauritus</i>				1			1	2				4
<i>Thamnophis sirtalis s</i>							1				1	2
<i>Virginia valeriae v.</i>			1									1
Total Number of animals by site	102	31	33	31	50	30	58	54	42	69	49	550

L=larva, T=tadpoles, S=Shell, * = Site visited Sunday

Annotated Checklist

Amphibians

1. *Acris crepitans* (Eastern Cricket Frog)

Eastern Cricket Frogs were observed calling in grassy wetland areas, along the margin of Rock Spring Pond, and in the tidal marsh at site 4. Many adults were hand captured and observed in grassy areas around and in small streams, and on the ground next to trails. Many hand-captured animals were inspected for disease and parasites but nothing unusual was documented.

2. *Anaxyrus americanus* (Eastern American Toad)

This species was found in a wide variety of locations. Habitats included in grass, on the forest floor, under bark, under logs, in timber debris, in open fields, under stumps, and under a Jon Boat. Of 10 sites sampled, American Toads were found in 9. One chigger larvae was observed parasitizing a small toad. This mite was attached to the pectoral region.



3. *Anaxyrus fowleri* (Fowler's Toad)
Fowler's Toads were typically found foraging in leaf litter. Several males were heard calling on Sunday morning at site 4.
4. *Hyla chrysoscelis* (Cope's Gray Treefrog)
Hyla chrysoscelis males were calling from every site visited during the survey weekend. Calling males were heard calling high within the canopy of all the sites, most of these sites are adjacent to wetlands, small streams, and marshy areas.
5. *Hyla cinerea* (Green Treefrog)
No Green Treefrogs were hand captured during the survey, only males were heard calling from wetlands at three sites.
6. *Lithobates catesbeianus* (American Bullfrog)
Only two bullfrogs were documented during the survey time period. One was hand captured in the spillway coming out of Rock Spring Pond.
7. *Lithobates clamitans* (Green Frog)
Of the Lithobatid frogs, the Green Frog was most frequently encountered. Males were heard calling along Rock Spring Pond, in water in various wetlands, and also calling from the tidal marsh at site 4.
8. *Lithobates palustris* (Pickerel Frog)
Pickerel Frogs were mainly found at the edge of small streams and ephemeral pools. Numerous Pickerel Frogs were not captured because of their ability to jump into the water and escape. One juvenile which was captured was inspected and found to have 3 chigger mites on its hind leg.

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9. *Lithobates sphenoccephalus* (Southern Leopard Frog)

Despite many hours of surveying and visiting a diversity of habitats, only one adult female Southern Leopard Frog was caught. This individual was carefully inspected to ensure it was not the newly described Atlantic Coast Leopard Frog (*Rana kauffeldi*) (Feinberg, et.al., 2014).

10. *Pseudacris crucifer* (Spring Peeper)

Juvenile Spring Peepers were observed foraging on the forest floor near wetlands at four sites.

11. *Ambystoma maculatum* (Spotted Salamander)

One Spotted Salamander larva and one old egg mass were dipnetted from a wetlands area at site 1. One adult salamander was found under a log in the forest near wetlands at site 5.

12. *Notophthalmus viridescens viridescens* (Red-spotted Newt)

Red-spotted newts were found under debris and walking in a forest near a wetlands area. Only efts were reported on data sheets.

13. *Plethodon cinereus* (Eastern Red-Backed Salamander)

A total of 22 Eastern Red-Backed Salamanders were found at four sites. All of these animals were found under logs.

14. *Pseudotriton ruber ruber* (Northern Red Salamander)

One large adult northern red salamander was found under a log pile at site 10. Upon closer inspection this animal had a missing eye. This appeared to be an injury and not a malformation.



Reptiles

15. *Chelydra serpentina* (Snapping Turtle)

Two adult Snapping Turtles were captured in baited hoop turtle traps set in Rock Spring Pond. One other adult turtle was observing in the tidal marsh at site 4.

16. *Chrysemys picta picta* (Eastern Painted Turtle)

Eastern Painted Turtles were observed basking on logs in Rock Spring Pond on Friday. Several baited hoop traps placed at this site caught 10 turtles. One small female was missing the toes on its right foot. Another turtle was seen eating a dead sunfish.

17. *Kinosternon subrubrum subrubrum* (Eastern Mud Turtle)

Only two mud turtles were found during the survey weekend. One was found along the side of a small stream and a juvenile was found in tidal wetlands at site 4.

18. *Sternotherus odoratus* (Eastern Musk Turtle)

One adult Eastern Musk Turtle was seen basking on a log in Rock Spring Pond during the Saturday survey. After photographing the animal it went into the water and then 30 minutes later it came back and climbed back on the same log.

19. *Terrapene carolina carolina* (Eastern Box Turtle)

Six dry shells and 17 live Eastern Box Turtles were found during the survey. Turtles were found on the forest floor, in forms made of leaf litter, and among fallen debris. A male was found 6m from a female in a form made of leaf litter. One adult female was found to have 3 missing scutes.

20. *Plestiodon fasciatus* (Common Five-lined Skink)

A total of 64 Common Five-lined Skinks were observed or captured during the survey weekend. This is 12% of all animal observations reported. A mixture of males, females and juveniles were observed. Lizards were found basking on logs, inside logs, and under logs. One male had a tick in its armpit area and a female was also observed having several ticks in its armpit area.

21. *Plestiodon laticeps* (Broad-headed Skink)

Sixteen Broad-headed Skinks were found at 6 sites. Animals were reported on fallen trees, under bark, and on the ground beside trees. One lizard was observed eating an insect and one juvenile was observed with a regenerating tail.

22. *Sceloporus undulatus* (Eastern Fence Lizard)

Eastern Fence Lizards were found at all ten sites. This species was found on logs, along a concrete wall, on fallen trees, on the sides of trees, and along the ground near trails. Male fighting behavior was reported on three data sheets. One lizard was reported having a truncated tail and one lizard was observed with a heavy infestation of ticks.

23. *Scincella lateralis* (Little Brown Skink)

Scincella lateralis was found at seven of ten sites. This species was mainly observed running on the ground in leaf litter within forested habitats.

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24. *Carphophis amoenus amoenus* (Eastern Wormsnake)

Of 550 animals found during the survey weekend, 106 were Eastern Wormsnakes. This comprises 19% of all animals found. Wormsnakes were found under logs, inside logs, under bark, under debris piles, under boards, under a canoe, under a barrel, and one gravid female was found in a rotten log. One snake was found dead, it was floating in a small woodland stream at site 10.

25. *Coluber constrictor constrictor* (Northern Black Racer)

Racers were found sitting in leaf litter in the forest at multiple sites, sunning on a log, and one was found under a canoe. One snake was found to have a bad scale on its bottom lip.



26. *Diadophis punctatus* (Ring-necked Snake)

Ring-necked Snakes were found under logs and under bark. One recorded snake had a complete neck ring and no marks on its belly.

27. *Lampropeltis getula* (Eastern Kingsnake)

Only one Eastern Kingsnake was found on the edge of the path at site 3.

28. *Nerodia sipedon sipedon* (Northern Watersnake)

Watersnakes were found basking on logs, along small streams, and several were found coiled in the middle of grass clumps by a small stream.

29. *Pantherophis alleghaniensis* (Eastern Ratsnake)

A total of three Eastern Ratsnakes were found at three sites. One was found on the forest floor, one was found along a woodland border, and one was found in a tree hollow approximately 2.1m off the ground.

30. *Storeria dekayi dekayi* (Northern Brownsnake)

Northern Brownsnakes were found in various habitats including under logs and under metal debris. Several snakes were observed foraging on the ground in wetlands and on the forest floor.

31. *Thamnophis sauritus sauritus* (Common Ribbonsnake)

Common Ribbonsnakes were all found near or in wetland areas. One juvenile ribbonsnake was found within feet of a juvenile Eastern Gartersnake at site 7. It was nice to find four ribbonsnakes considering this is a Virginia Wildlife Action Plan Tier IV species.

32. *Thamnophis sirtalis sirtalis* (Eastern Gartersnake)

Two garter snakes were found, at sites 7 and 10. The juvenile on the forest floor at site 7 was found within a meter of a juvenile Common Ribbonsnake.



33. *Virginia valeriae valeriae* (Smooth Earth Snake)

One Smooth Earth Snake was found under a log beside the trail at site 3.

Discussion

A number of herpetological diversity surveys have been reported in the literature for the Northern Neck of Virginia (Hill and Pierson, 1986; Eckerlin, 1991; Greenlee, 2001; Steele, 2006; and Perry, 2013). These reported sites lie to the east, west, and south of Westmoreland State Park. This gives us a good idea of the diversity for this region and each report serves as a guide as to which species may still be found in the park during future surveys. Within this report we have recorded 33 species of reptiles and amphibians for Westmoreland State Park. *Malaclemys terrapin terrapin* has also been observed on the property; one dead terrapin washed up on the shoreline late last fall (Ken Benson, pers. comm.). This brings the total documented for the park to around 34 species. This total is very similar to the range of total species found in surveys which have been conducted near the park. Hill and Pierson (1986) found 39 species in a one year survey of Caledon State Park, Eckerlin (1991) collected 31 species from George Washington Birthplace National Monument during 1986-1989, Greenlee (2001) recorded 29 species in a two day survey of Northumberland County, Lancaster County, and Middlesex County, Steele (2006) reported 32 species during a two day survey of Rappahannock River Valley National Wildlife Refuge, and Perry (2013) was able to find 22 species in a one day repeat survey of Caledon State Park. Since each of these published accounts have expected species lists for the area, we will conclude this discussion by stating some possible interesting biogeographical puzzles for this region.

The distribution of three anurans present a challenge to future investigations of this region. *Gastrophryne carolinensis* was reported in Greenlee (2001) but not in any other published reports

from Northern Neck sites to the west. One must think that perhaps northwestern Westmoreland County may be the end of its range (Mitchell and Reay, 1999). *Lithobates sylvatica* on the other hand was reported in Hill and Pierson (1986) in King George County but was not reported in any other survey in the Northern Neck. Future surveys may extend its known range east of Caledon State Park. The range and distribution of *Rana kauffeldi* (Feinberg, et.al., 2014) will need to be investigated in this region of Virginia. Since this is a newly described species for the state, its entire range will need clarification. Since all these species have conspicuous calls, members of the Virginia Frog and Toad Survey and FrogWatch USA may help extend the known ranges of these species in the Northern Neck. The depauperate species count for salamanders in Westmoreland State park probably represents either a lack of good habitat, bad luck in sampling, poor weather conditions, or not enough sampling effort. Hill and Pierson (1986) reported the largest number of salamander species at nine; and their research extended for a longer period of time and utilized drift net fences. One species, *Eurycea guttolineata* is surprisingly absent from the Northern Neck despite being found to the south, west, and in northern Virginia counties (Mitchell and Reay, 1999). What is the barrier preventing this species from the Northern Neck? The true range of one species of turtle, *Kinosternon baurii*, will be aided by more surveys with baited hoop turtle traps. This species is found on the southeastern end of the Northern Neck but its range probably extends further to the northwest. One lizard has a puzzling distribution on the Northern Neck. *Plestiodon inexpectatus* has been found at sites on the southeastern Northern Neck with a three county hiatus which ends in northern Virginia with several records in Fairfax and Loudoun counties. Are the records from Fairfax and Loudoun misidentifications or do they represent the most northerly range for this species? The last species that would be interesting to add to the list of herps found in the Northern Neck would be *Regina septemvittata*. This species is documented in Caroline County, which touches counties in the Northern Neck. It is interesting to speculate what current or what past barrier is preventing this species from being found in the Northern Neck. As a concluding note of interest, this survey only produced one observation of a snake with a lesion on its skin. This contrasts strongly with Steele's 2006 report on a survey close to Westmorland State Park in Richmond County. In that survey many snakes including different species were found to have skin lesions. As noted by the author, the spring leading up to that survey was cool and wet. The weather leading up to this survey was much different.

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Acknowledgments

This survey would not have been possible without the work of Kory Steele and Mike Salotti. It takes many hours to prepare maps, contact parks, request collecting permits, field emails, and organize volunteers. The VHS is very appreciative of their effort, time, and enthusiasm at organizing such a nice event. The VHS would like to give special thanks to Kenneth Benson, the park manager. He came and spoke to the group on Friday night and made everyone feel welcomed to the park. He also provided a photograph of a Diamondback Terrapin he found on the property last fall. We would like to thank Kory Steele for supplying the map of the survey site used in this paper. Paul Sattler and Catherine Lavagnino provided photographs for this paper. The VHS would also like to thank the following people for serving as group leaders: Travis Anthony, Wes Van Gelder, Jason Gibson, Larry Mendozoa, David Perry, Mike Salotti, Paul Sattler, Caroline Seitz, and Kory Steele. These group leaders are invaluable to a survey in helping to care for group members, teach new members how to survey and identify species, and record data. We finally would like to thank all the volunteers who came out and participated in the survey. We apologize for any misspelled names or names left out. Craig Abbott, Alexandra Anthony, Travis Anthony, John Balthis, Levi Balthis, Wyatt Balthis, Mitch Bowling, Tim Bova, Christopher Broceolo, Covington Brown, Hampton Brown, Becca Dutton, Kim Dutton, Robert Frezza, Rosemary Frezza, Kelly Geer, Jason Gibson, Kristen Gutowski, Tom Holman, Bryan Johnson, Brian Kim, Mitchell Kim, Frank Knott, Frank Knott IV, Daura Knott, Catey Lavagnino, Loren Looger, Adam Lynch, Cristine Lynch, Colleen Marzec, Larry Mendoza, Carol Lena Miller, David Miller, Jonas Miller, Zeb Miller, Robyn Nadolny, Tucker Nelson, James O'Hara, Nathan O'Hara, Rich O'Hara, Christopher Oltorik, Sophia Passaro, Vincent Passaro, David Perry, Isaac R., James R., Karl R., Raquel Rickland, Arathi Salotti, Michael Salotti, Paul Sattler, Angie Schroeder, Ryan Schroeder, Caroline Seitz, Igor Siwanowicz, Emily Steele, Kory Steele, David Stern, Everett Stern, Ian Susens, Kieran Tang, Tammy Tideswell, Cheyenne Trent, Dave Van Gelder, Wes Van Gelder, Patrick Wamsley, Susan Watson, Joellen Welch, Brooke Wilson, Amy White, Charise White, and John White



Impacts of Prescribed Burning
on Three Eastern Box Turtles (*Terrapene carolina carolina*)
in Southwestern Virginia

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Introduction

The Eastern Box Turtle (*Terrapene carolina carolina*) is a common species throughout most of Virginia, but is listed as a Tier III species in the Virginia Wildlife Action Plan, indicating a high conservation need and action needed to stabilize or increase populations of the species.

Eastern box turtles typically overwinter in forests (Dodd, 2001). Overwintering behavior in southern Virginia varies with winter weather conditions, but in a normal winter, overwintering depths of turtles is typically not deep, with the top of the carapace often at or just below the duff layer (Ellington et al., 2007). Box turtles may even emerge during the winter for brief periods (Ellington et al., 2007; Dodd, 2001).

Because of their overwintering behavior, another potential conservation threat to the Eastern Box Turtle may be the increasing use of prescribed fire. Prescribed fire is carried out for a number of different management objectives, including controlling the composition of tree regeneration, fuel reduction, wildlife habitat improvement, and control of invasive species. In southern Virginia, prescribed burns are typically carried out in the late winter and early spring (Waldrop and Goodrick, 2012).

Studies on the effect of prescribed burning on box turtles are relatively scarce. Dodd (2001) noted that there is anecdotal information of turtles scarred by fires losing scutes which, although not fatal, may make turtles more susceptible to cold, heat and drought. Platt et al. (2010) reported that season of burning had a significant effect on box turtle mortality in Florida. Box turtle mortality was higher during the wet season (when box turtles were more active) than during the dry season. Greenberg and Waldrop (2008) also note that box turtles may be indirectly affected by fire because of habitat alteration. Box turtles use leaf litter for thermal cover and removal of leaf litter by fire may therefore reduce habitat quality. It is also conceivable that leaf litter removal by fire may reduce habitat quality for overwintering, but no studies have investigated this hypothesis. In a review of the effects of prescribed fires on reptiles, Russell et al. (1999) conclude that there are probably few long-term effects of controlled burning on reptiles in general, but box turtles may be more susceptible because of their limited ability to escape fire and their dependence on forest leaf litter.

The objective of this study was to determine the impact of prescribed fires on Eastern Box Turtles by carrying out simulated prescribed burning in areas where turtles are overwintering and recording their subsequent behavior during and after overwintering.

Materials and Methods

The study was conducted at two locations on the campus of Ferrum College in Franklin County (Chapman Pond and Moonshine Creek), Virginia and another site on private property approximately one mile from the College (Rambling Rose). All study sites contained mature (> 70-year-old) mixed pine-hardwood forests with the canopy dominated by Oaks (*Quercus* spp.), Red Maple (*Acer rubrum*), Tuliptree (*Liriodendron tulipifera*), and White Pine (*Pinus strobus*). The forests had been subjected to light selective logging approximately 30 years ago. The Chapman Pond study area is situated on a low ridge with relatively flat topography. The Moonshine Creek area is on a moderate (2-10%) slope with an East-facing aspect. The Rambling Rose area has variable aspects and slopes (0-10%).

We searched the three study areas and located ten turtles during the summer and fall of 2014. We located three turtles at Chapman Pond, five at Moonshine Creek, and two at the Rambling Rose site. Radio-transmitters (Wildlife Materials Inc., Murphysboro, KY) were affixed to the carapace of each of the ten turtles using gel epoxy. Turtles were tracked approximately every ten days using radio-telemetry using a TRX 2000 telemetry receiver and antenna (Wildlife Materials, Murphysboro, KY) until they settled into their overwintering sites.

We randomly selected 1-2 turtles at each of the study areas (a total of five turtles) for a simulated prescribed burn surrounding their overwintering site at some point between early December and late March when prescribed burns are normally carried out in Virginia. The remaining five turtles were used as a control population to compare hibernation behavior with the turtles at the prescribed burn sites.

The simulated prescribed burn consisted of burning the leaf litter over an area approximately 2 x 2 m surrounding the overwintering site. Leaf litter was raked away around the burn area to prevent the spread of fire and the litter was ignited using a drip torch on the downwind side of the area in order to conduct a back fire (a fire backing into the wind) (Figure 1). Back fires are normally used in prescribed burning because they burn more slowly, are easier to control, and provide for a more complete combustion of fuels (Waldrop and Goodrick, 2012).

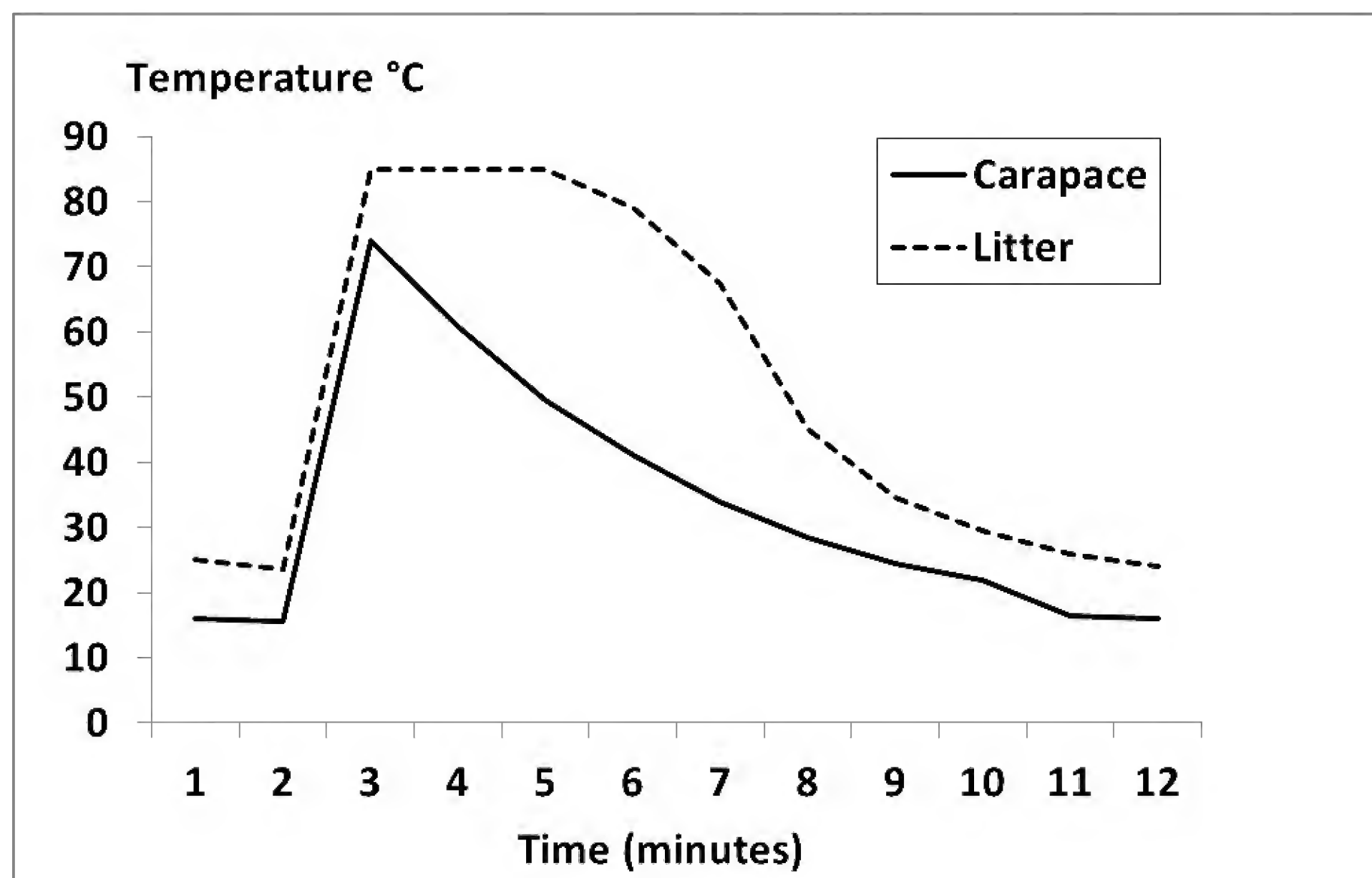
Because of logistic issues and weather conditions, we were only able to conduct burns over three turtles at two sites on March 17-18. Burning can only be carried out safely under appropriate weather conditions and when adequate personnel support is available. Burning is also restricted until after 1600 hours from February 15-May 1 by Virginia state law. Burns on these days were carried out between 1700-1830 hours. Ambient weather conditions during this were favorable for prescribed burns: air temperature ranged from 18-20 °C, relative humidity ranged from 25-35%, and wind velocity was < 15 km/hr. Leaf litter at each site was dry enough to support a burn. The temperature at the surface of the litter and on the top of the turtle carapace was measured immediately before, during and after the burns using i-button sensors (Thermochron Corporation, Dallas TX) that were set to record temperatures at one-minute intervals. We

observed the behavior of the turtles before, during, and after the burn. We also visited the burn sites 30 minutes and 1 day after the burns to determine if the turtles moved after the burn. In addition, we tracked each of the ten turtles weekly after the burns to determine the approximate date of emergence from the overwintering sites for the three turtles on the burn sites compared to the other seven turtles where burning was not conducted.

Results

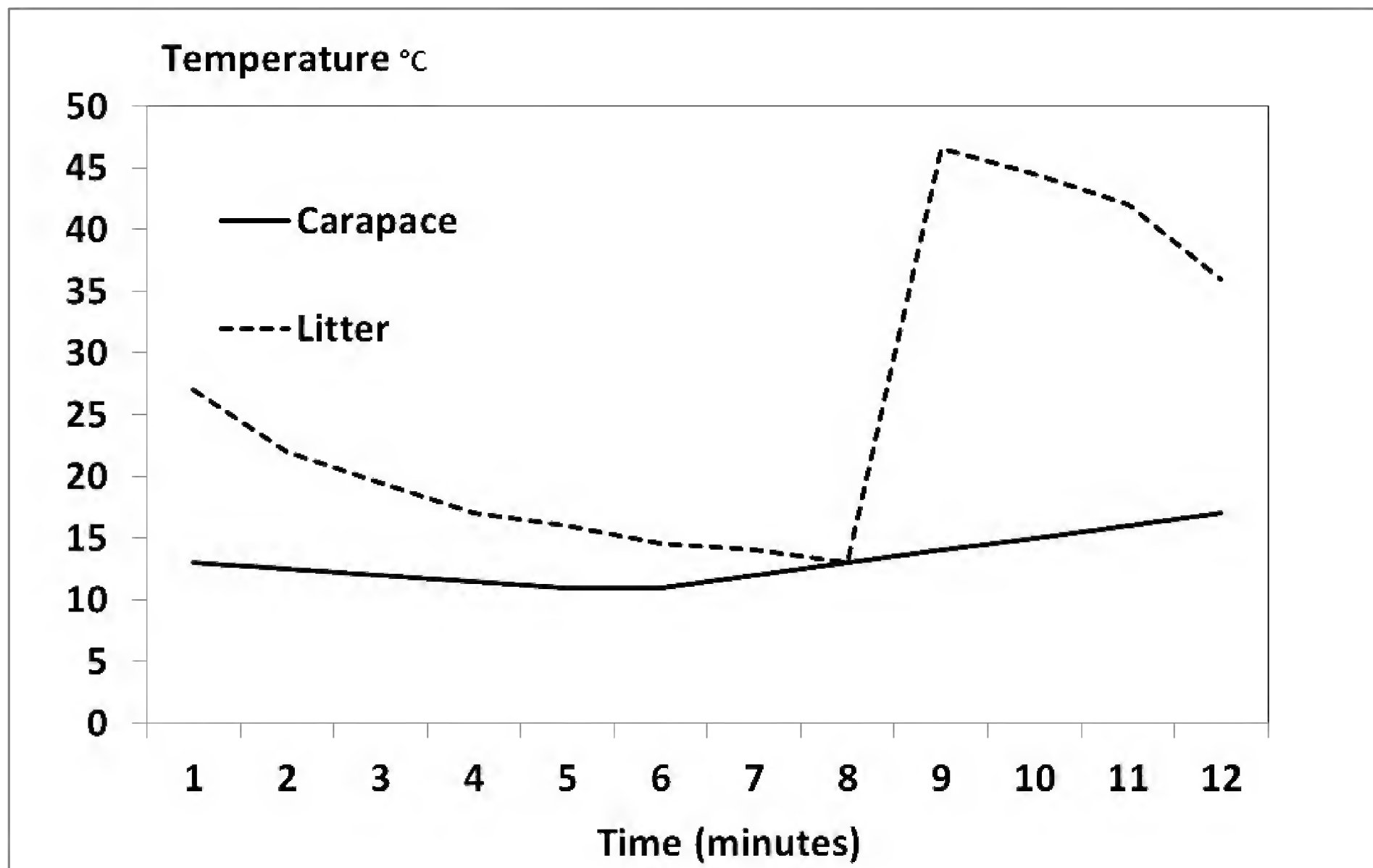
Only one of the three turtles was immediately impacted by the experimental burn (Turtle 1). The depth of this overwintering site was relatively shallow with the turtle buried mostly in the duff layer and with approximately 30% of the carapace exposed at the base of the loose leaf litter layer. Leaf litter temperatures reached 85°C during the burn and the sensor on the carapace temperature reached 72°C (Figure 2). There was some visible movement of the turtle immediately after the burn and the affected turtle emerged from the overwintering site approximately one hour following the burn and was observed slowly moving away from the burn site. It did not appear to be injured by the fire although the wire on the transmitter was slightly melted. The transmitter was still functional. One day later, the turtle was buried into the duff layer approximately 3 m from the burn site. It was active on the surface in mid-April with no apparent injury.

Figure 2. Temperature of sensors on surface of leaf litter and turtle carapace during the fire event for turtle 1.



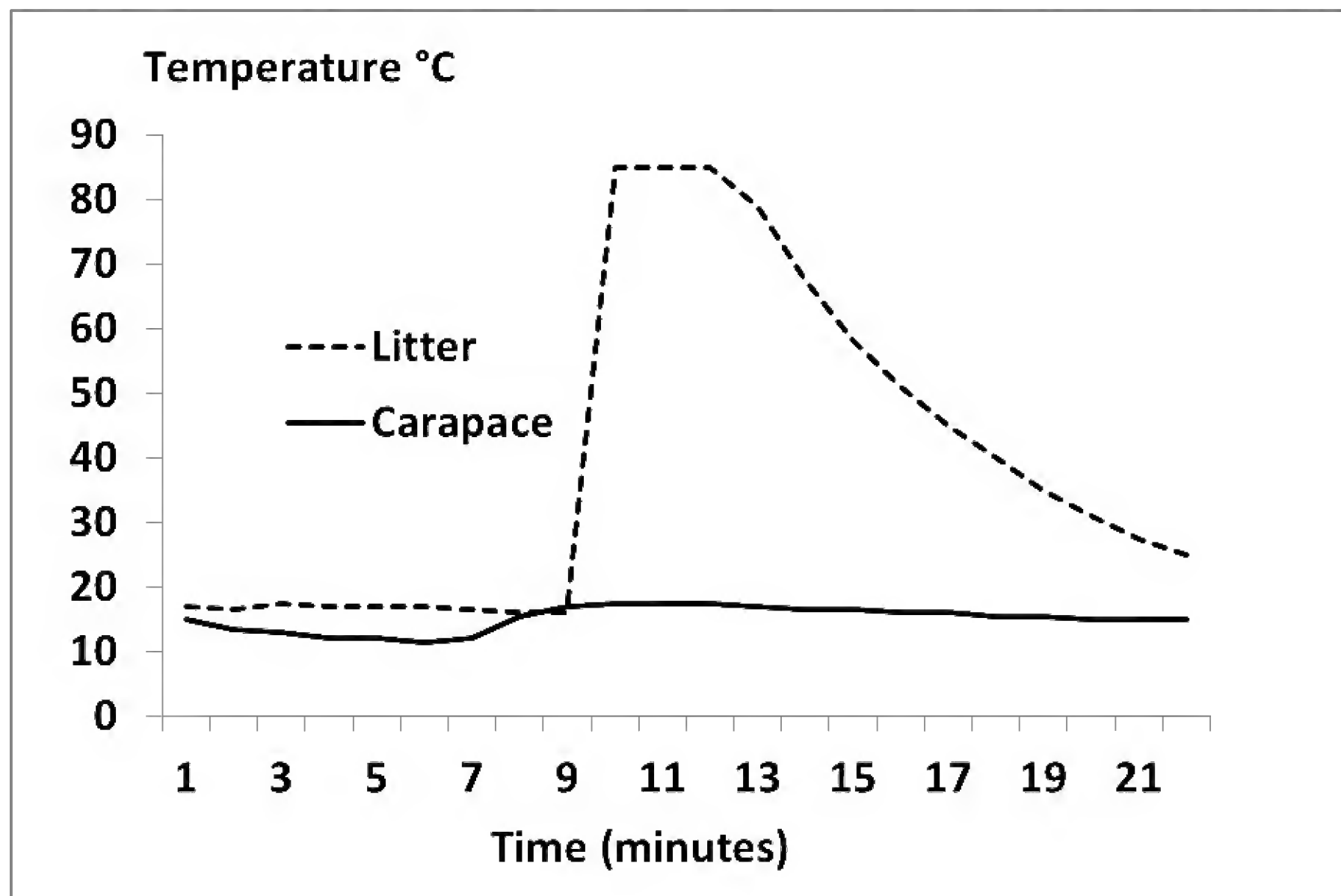
Turtle 2 was buried more deeply than turtle 1, with only 5% of the carapace exposed at the base of the loose leaf litter layer. The duff layer at this site also appeared to be moister compared to the site of turtle 1. The leaf litter temperature during the burn at this site reached a maximum of 45°C and carapace temperature rose only slightly during the burn (Figure 3). The turtle did not move during or after the burn and had not moved by the following day. It emerged from overwintering in mid-April with no apparent effects from the fire.

Figure 3. Temperature of sensors on surface of leaf litter and turtle carapace during fire event for turtle 2.



Turtle 3 was buried in the duff layer with approximately 10% of its carapace exposed. We noticed some movement of this turtle while preparing the site for the burn. The temperature during the burn reached 87°F, but the carapace temperature rose only slightly (Figure 4), perhaps because the duff layer appeared more moist compared to the sites for turtles 1 and 2. Immediately following the burn, the turtle's head emerged from its shell and it seemed to have been aroused more by the smoke than the fire itself. Its head was still exposed from the shell after 1 hour. On the following day, it was still in its overwintering site with its head in its shell. It emerged from overwintering in mid-April.

Figure 4. Temperature of sensors on surface of leaf litter and turtle carapace during fire event for turtle 3.



The other seven turtles showed no activity during the winter monitoring period and emerged from their overwintering sites during mid-April, except for one turtle which moved from its overwintering site in early April.

Discussion

The results of this study are somewhat anecdotal because prescribed burns were carried out over the overwintering sites of only three box turtles during one time of the year. The data, however, indicate variability in the behavior of box turtles following the occurrence of burning over their overwintering sites, mostly due to the depth of the turtle below the leaf litter and microsite conditions such as soil and duff layer moisture levels. The one turtle that moved out of the overwintering site after the fire, experienced high carapace temperatures, most likely due to a larger percentage of the carapace protruding out of the duff and exposed to the fire burning through the leaf litter. The other two turtles did not move from their overwintering sites after the fire, presumably because of lower carapace temperatures due to reduced carapace exposure and observed moister duff layer conditions.

Box turtles in Virginia are likely to be more susceptible to prescribed fire compared to turtles in northeastern states because their overwintering sites are relatively shallow (Ellington et al. 2007), but they are likely to be overwintering throughout the period when prescribed burning

is carried out (December – March). Prescribed burning is normally not carried out during the growing season because higher humidity makes it difficult to sustain a prescribed burn (Waldrop and Goodrick, 2012). However, Howey and Roosenberg (2013) documented a prescribed burn carried out in September at a site in Kentucky and reported injuries to turtles that were not yet overwintering. In contrast to mid-Atlantic states, the states in the lower southeastern U.S. have a shorter overwintering season for box turtles and are exposed to more frequent prescribed burning, particularly in pine forests, likely making turtles more vulnerable to fire. Platt et al. (2010) recommended burning during seasons when turtles are dormant. It was also recommended that burns be carried out using slower-moving backfires and that burning be conducted on smaller areas. Interestingly, they also noted that more frequent light burning may reduce fuel loads and potentially reduce mortality from more severe fires on areas with higher fuel loads. In Virginia, more research on box turtle responses to prescribed fire would be particularly useful in the southeastern portion of the state where burning is more common in pine forest ecosystems.

Although burning did impact the behavior of two of the three turtles in this study, it did not appear to injure the turtles or impact their longer-term overwintering behavior. All three turtles in this study emerged from overwintering in mid-April and the removal of leaf litter over the overwintering site did not result in emergence compared to overwintering turtles not exposed to the burning treatment. More intense fires resulting from larger fuel loads or hotter fires that occur under dryer conditions are likely to burn more deeply into the duff layer and may cause injury to turtles and/or alter their overwinter behavior. In addition, the burns carried out in this study occurred during relatively warm weather. If turtles are disturbed by burns carried out under colder weather conditions, they may not be able to successfully acclimate in time to resume overwintering. More testing is necessary to increase the sample size (for statistical significance) and to obtain data under a wider range of conditions, e.g. testing under colder conditions with larger fuel loads. This will provide more reliable data needed for prudent management decisions regarding prescribed burns in a variety of box turtle habitats. However, our results indicate that prescribed burning (given similar weather conditions and fuel loads) poses no discernable threat to hibernating box turtles.

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Figure 1. Prescribed burn on an overwintering site of an Eastern Box Turtle.



Field Notes

***Hyla versicolor* (Gray Treefrog)** VA; Stafford Co., Aquia Creek (38° 28' 7.5720'' N 77° 23' 2.3244'' W). May 22 2015. Connor O'Hara.

County Record: On 22 May 2015 in the late evening I was searching for *Hyla chrysoscelis*, which was calling, when two different calls were heard in close proximity to Aquia Creek. Upon following the calls of *Hyla chrysoscelis*, I noted calls of *Hyla versicolor*. *Hyla versicolor* is identical in appearance to the other Gray Treefrog native to Virginia (*Hyla chrysoscelis*), and the only way to distinguish the two in the field is by their call. Both calls were heard, and I traced the one call to a male *Hyla versicolor*. An audio file was recorded to voucher the species for Stafford County. *Hyla versicolor* has not been previously documented for Stafford County (Mitchell, J.C. and K.K. Reay 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.; <http://www.virginiaherpetologicalsociety.com/amphibians/frogsandtoads/graytreefrog/graytreefrog.php>), although it has for all counties surrounding Stafford. Therefore, its presence in Stafford County is not unexpected. A digital photograph and audio files were submitted to the VHS (Archive #342)

Connor O'Hara

Translational Medicine Intern
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***Hyla squirella* (Squirrel Treefrog)** VA: Charles City Co., State Route 603 (37° 25' 53.61''N, 77° 09' 05.45''W). 4 June 2015. Brian Munford

County Record: On 4 June 2015, at approximately 22.30h, while conducting opportunistic survey work, a small squirrel treefrog chorus was noted and recorded. This observation is a new county record and represents a western expansion in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 343)

Brian Munford

4021 Northrop Street
Richmond, VA 23225

***Hyla femoralis* (Pine Woods Treefrog)** VA: Henrico Co., Darbytown Road (37° 26' 45.99"N, 77° 15' 02.89"W). 4 June 2015. Brian Munford

County Record: On 4 June 2015, at approximately 21.30h, while conducting opportunistic survey work, a Pine Woods Treefrog chorus was noted and recorded. This observation is a new county record and represents a western expansion in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 344) as a voucher.

Brian Munford
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Richmond, VA 23225

***Hyla femoralis* (Pine Woods Treefrog)** VA: Essex Co., State Route 612, Bestland Road (37° 49' 02.94"N, 76° 53' 20.41"W). 6 July 2015. Brian Munford

County Record: On 6 July 2015, at approximately 21.40h, while conducting opportunistic survey work, a Pine Woods Treefrog chorus was noted and recorded. This observation is a new county record and represents a northern expansion in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 349)

Brian Munford
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Richmond, VA 23225

***Hyla femoralis* (Pine Woods Treefrog)** VA: Hanover Co., Bullfield Road, State Route 731 (37° 51' 50.29"N, 77° 26' 37.63"W). 24 June 2015. Brian Munford

County Record: On 24 June 2015, at approximately 00.30h, while conducting opportunistic survey work and after a fairly extensive search of eastern Hanover County, a Pine Woods Treefrog chorus was noted and recorded. This observation is a new county record and fills a hiatus in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 350)

Brian Munford

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Richmond, VA 23225

***Hyla femoralis* (Pine Woods Treefrog)** VA: Gloucester Co., State Route 637, Turks Ferry Road (37° 31' 58.82"N, 76° 34' 48.56"W), and State Route 198, Glenns Road (37° 33' 44.99"N, 76° 35' 49.43"W). 7 July 2015. Brian Munford

County Record: On 7 July 2015, at approximately 21.30h and 21.40h, while conducting opportunistic survey work, two Pine Woods Treefrog choruses were noted and recorded. This observation is a new county record and represents a northeastern expansion in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) Digital recordings has been deposited in the VHS archives as vouchers for these locations (Digital voucher # 345 & 346)

Brian Munford

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Richmond, VA 23225

Pine Woods Treefrog (*Hyla femoralis*) VA: Middlesex Co., State Route 618, Lovers Retreat Lane (37° 36' 49.40"N, 76° 38' 38.33"W). 7 July 2015. Brian Munford

County Record: On 7 July 2015, at approximately 21.30h, while conducting opportunistic survey work, a Pine Woods Treefrog chorus was noted and recorded. This observation is a new county record and represents a northern expansion in the distribution map of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 347)

Brian Munford

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Richmond, VA 23225

Field Notes

***Coluber constrictor constrictor* (Northern Black Racer)** VA: Bath Co., Douthat State Park (37° 54' 13.4"N 79° 48' 17.8"W). 6 June 2015. Michael Salotti

County Record: I witnessed a large northern Black Racer basking on a sunny hill on the western bank of the Douthat Lake dam. Later that same day, I witnessed a smaller Racer basking on a cliffside about 350 meters from the dam. I was able to capture this smaller adult and take some photographs. One of these was submitted to the VHS Archive (#336) as a voucher. The snake was released and quickly slithered into the branches of a locust tree. Neither Mitchell (The Reptiles of Virginia. 1994. Smithsonian Institution Press, Washington, D.C. 352 pp.) nor Mitchell and Reay (An Atlas of Amphibians and Reptiles in Virginia. 1999. Special Publication No. 1. Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.) show the presence of Black Racers in Bath County, although they are reported from all surrounding counties.

Michael Salotti

Mechanicsville, VA 23116



***Storeria occipitomaculata occipitomaculata* (Northern Red-bellied Snake)** VA: Bath Co., 0.37 km SSW of Healing Springs, (37.958493°N -79.865339°W). 13 June 2015. Mike Hayslett.

County Record: A small snake (~20 cm TL) was encountered in the hiking trail above the Cascades Gorge on property of the Omni Homestead resort ca. 12:00 noon on 13 June. It was at approximately 2,200' elevation in a mixed hardwood forest of young age; and had a dark gray dorsal color. This snake was handled, photographed and released on site. Two digital photographs (dorsal and ventral views) were submitted to the VHS archives (#337) as a voucher.

This secretive species has been documented from surrounding counties (except Rockbridge) of the Alleghany Highlands in the Ridge & Valley physiographic province, but not previously from Bath (Mitchell J.C. and K.K. Reay 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA 122 pp.; and Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.)).

Michael S. Hayslett, M.S.
Virginia Vernal Pools, LLC
P.O. Box 410
Clifton Forge, VA 24422



Field Notes

***Crotalus horridus* (Timber Rattlesnake).** VA: Montgomery Co., Bottom Creek Gorge Preserve (37.130829, -80.180562). 24 May 2015. Wes Hudson.

County Record: On 24 May 2014 at 15:56h a subadult *Crotalus horridus* was observed within the Bottom Creek Gorge Preserve. The Timber Rattlesnake has not been previously documented for Montgomery County by Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.) or the Virginia Herpetological Society database. A digital photograph of the specimen was submitted to the VHS archives (Archive#351).

Wes Hudson

3620 Buckner Road, SW. #10

Roanoke, VA. 24015



Opheodrys aestivus (Rough Green Snake) VA: Washington Co, near the North Fork of the Holston River on the porch of 12163 Roebuck Rd, Abingdon, VA (GPS 36.7636.769501, -82.110697). 22 June 2015. Jack Scott.

County Record: Our farm is a choose-and-cut Christmas tree farm, untrimmed at this time, so the grass was high and there were many grasshoppers, small preying mantis, and other insects present. Upon returning to the house early on the evening of 22 June 2015, I found a Rough Green Snake had wrapped itself around a small table next to a grape vine on our porch. The snake remained on the porch for over 30 minutes allowing me to take several digital photos. The snake was approximately 75 cm in length. Digital photos were sent to the VHS where it was identified as a Rough Green Snake. A digital photo was deposited in the VHS Archive (#354) as a voucher.

Jack Scott

Swinging Bridge Farm
Abingdon, VA



Lampropeltis calligaster (Mole Kingsnake) VA: Stafford County. Clarion Drive, Falmouth, VA. 25 May 2015. Elia Kosnoski.

County Record: On 25 May 2015 my dog was barking in the back yard. Upon investigation, I found it had discovered one snake in the process of consuming another. A Mole Kingsnake (approximately 0.5 m) had about one third of a Northern Rough Greensnake (approximately 0.67 m) consumed at that point. I separated the snakes and took digital photos of both. Both snakes were later released, unharmed.

The Mole Kingsnake has not previously been reported from Stafford County (Mitchell, J.C. 1994. *The Reptiles of Virginia*. Smithsonian Institutional Press, Washington, DC. 352 pp.). It is known from all surrounding counties except King George to the southeast, so its presence in Stafford is not unexpected. A digital photograph was sent to the VHS Digital Archive (#355) as a voucher.

Elia Kosnoski

Clarion Drive

Falmouth, VA



***Trachemys scripta elegans* (Red-eared Slider)**, VA: Tazewell Co., Lincolnshire Park, North Tazewell, VA. (37.14449 N, 81.49864 W). 22 March 2014. Kevin Stilwell.

County Record: At 1845 h on 22 March 2014 a red-eared slider (*Trachemys scripta elegans*) was observed along the northeastern shoreline of the lake at Lincolnshire Park in the town of North Tazewell, VA. Photographs were taken and submitted to VHS for verification (VHS Archive #341). This is the first confirmed record of *Trachemys scripta elegans* from Tazewell County or any other location in southwestern Virginia (Mitchell, J.C. and K.K. Reay. 1999. *Atlas of Amphibians and Reptiles in Virginia*. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.). This observation establishes the

westernmost location where this species has been observed in Virginia. It is almost certainly introduced and it is highly unlikely this species naturally occurs at this location since its native range is hundreds of km to the west. The Red-eared Slider is found in scattered localities in Virginia further to the east where it has also been introduced and it is now recognized as a “naturalized” species by the Virginia Department of Game and Inland Fisheries (Virginia Department of Game and Inland Fisheries List of Native and Naturalized Fauna of Virginia March, 2014 <http://www.dgif.virginia.gov/wildlife/virginianativenaturalizedspecies.pdf>). The presence of the Red-eared Slider in Tazewell County and other Virginia locations is a concern due to the potential for interspecific competition with native turtle species. (Mitchell, J. C., 1994. *The Reptiles of Virginia*. Smithsonian Institution Press, Washington, DC. 352 pp.). The introduction of non-native and/or invasive species and competition may lead to population declines or extirpation of our native turtle species (Pearson SH, Avery HW, Kilham SS, Velinsky DJ, Spotila JR. 2013. Stable Isotopes of C and N Reveal Habitat Dependent Dietary Overlap between Native and Introduced Turtles *Pseudemys rubriventris* and *Trachemys scripta*. PLoS ONE 8(5): e62891. doi:10.1371/journal.pone.0062891). In areas where the introduced Red-eared Slider coexists with native *Trachemys scripta* subspecies it intergrades and erodes the gene pool of the native (*T. s. troostii* and *T. s. scripta*) subspecies (Mitchell, J. C., 1994, *The Reptiles of Virginia*. Smithsonian Institution Press, Washington, DC. 352 pp.)

Kevin Stilwell

North Tazewell, VA 24630



***Chrysemys picta picta* (Eastern Painted Turtle)**, VA: Tazewell Co., Cavitt's Creek Park, Lake Jack Witten, North Tazewell, VA. (37.174309 N, 81.51934 W). 27 April 2014. Kevin Stilwell.

County Record: At 1700 h on 27 April 2014 an eastern painted turtle (*Chrysemys picta picta*) was observed along the northeastern shoreline of Lake Jack Witten in Cavitt's Creek Park, Tazewell Co. VA. Cavitt's Creek is a tributary of the Clinch River, which originates in Tazewell County and is a significant headwater tributary of the Tennessee River. Photographs were taken and submitted to the VHS for verification (VHS Archive #357). This observation is the first confirmed record of *Chrysemys picta picta* from Tazewell County, Virginia (Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.) and expands the distribution record of this species in southwestern Virginia.

The status of *Chrysemys picta picta* in southwestern Virginia needs clarification according to Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.) To date, this species has been verified in scattered locations within the upper Tennessee River watershed, including the neighboring counties of Buchanan and Smyth, yet not documented in neighboring Russell County nor to the east in Bland County within the New River watershed (Virginia Herpetological Society http://www.virginiaherpetologicalsociety.com/reptiles/turtles/turtles_of_virginia.htm accessed 26 August 2015), suggesting this species may be somewhat uncommon in this area and/or poorly studied. It is possible; even likely, the individual observed at this location is an intergrade. The situation is complex due to the presence of *Chrysemys picta picta*, *Chrysemys picta marginata* and their intergrades in the region. The closely related Midland Painted Turtle (*Chrysemys picta marginata*) is only verified in one county in southwest Virginia, in neighboring Russell County (Virginia Fish and Wildlife Information Service. <http://vafwis.org/fwis> accessed 26 August 2015), whereas both *Chrysemys picta picta* and *Chrysemys picta marginata* have been verified a short distance away in Mercer County, WV (Phu, Linh Diem 2010. The Natural History & Distribution of Riverine Turtles in West Virginia. M.S. Thesis, Marshall University). These two *Chrysemys picta* subspecies are known to interbreed with intergrades displaying morphological characteristics of both species. Intergrades have been observed in neighboring Mercer County to the northeast (Mann, Melissa R. 2007. A Taxonomic Study of the Morphological Variation and Intergradation of *Chrysemys picta* (Schneider) (Emydidae, Testudines) in West Virginia. M.S. Thesis, Marshall University) and a 2014 study determined most *Chrysemys picta* in Virginia exhibited the characteristics of intergrades (Ernst, Carl H., Et al. 2014. Variation and zoogeography of the turtle *Chrysemys picta* in Virginia, USA. Herpetological Bulletin 130: 9-15).

Kevin Stilwell

North Tazewell, VA 24630



***Sceloporus undulatus* (Eastern Fence Lizard)**, VA: Tazewell Co., Cedar Bluff Overlook Park (37.083754 N, 81.762416 W). 25 June 2013. Kevin Stilwell.

County Record: The Eastern Fence Lizard (*Sceloporus undulatus*) is a member of the spiny lizard family (Iguanidae) having a widespread geographic distribution in a variety of habitats in much of the eastern and southern U.S. The distribution of *S. undulatus* in Virginia is generally well documented (Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122pp), however there are areas within the Appalachian Plateau and Valley and Ridge physiographic regions of southwest Virginia lacking vouchered records for relatively common species (J. N. Fulton, M. Couch, and W.H. Smith. 2014. New Geographic Distribution Records for Herpetofauna in Southwest Virginia, USA. Herpetological Review 45(1), 105 – 106).

At 1215 h on 25 June 2013 an Eastern Fence Lizard (*Sceloporus undulatus*) was observed near the observation deck at the Cedar Bluff Overlook Park located high above U.S. Route 460 and the town of Cedar Bluff, VA. Photographs were taken and submitted to VHS for verification (Archive # 340). This is the first confirmed record of *S. undulatus* from Tazewell County. This observation along with another recently documented sighting in neighboring Russell County (J. N. Fulton, M. Couch, and W.H. Smith. 2014. New Geographic Distribution Records for Herpetofauna in Southwest Virginia, USA. Herpetological Review 45(1), 105 – 106) to the southwest, fills a void in the distribution record of this species in southwestern Virginia as it has been verified in all of the surrounding VA counties.

Field Notes

Kevin Stilwell

North Tazewell, VA 24630



President's Corner

Greetings my fellow herp enthusiasts,

It is that time of year again. One administration is on its way out while the next is on its way in. Each election cycle brings with it a new burst of enthusiasm that can benefit the Virginia Herpetological Society greatly. There is so much news to convey from our fall meeting. We have new officers, new committees and even some new positions. Without further ado, I would like to introduce to you the faces of the VHS.

After serving as President for a second term, Kory Steele will be sliding into retirement by serving the VHS as Past President. He has done so much to advance the society throughout his terms, and I am glad we have him as a resource for any questions that arise. In addition to serving as Past President, Kory will be heading up the newly formed Grants Committee. This committee will be responsible for sending our grant requests and making sure we get all the required information. Joining him in this newly formed committee is Larry Mendoza. Larry has previously served as Vice President, President and Past President. I'm sure between the two of them, the grants process will move smoother than ever.

Our newly elected Vice President is Matt Neff. Matt got his first exposure to herpetology at a very young age while listening to frog calls with his father. He graduated from Manhattanville College in 2008 with a bachelor's degree in biology. Since then, he has worked at the Long Beach Nature Center and currently works for the Smithsonian National Zoo in Washington D.C. I look forward to his educated input on all matters.

Matthew Close was elected to take over the position of Treasurer. He is currently employed as an Assistant Professor at Radford University. The duties of Treasurer can often seem very daunting, but I have no doubt that Matt is up for the challenge.

For this election cycle, we decided to split the position of Treasurer and Secretary. Dave Perry had been serving as both, and he graciously agreed to continue his service as Secretary. Dave has been highly involved in the society for years. Most recently, he has served as Vice President, Treasurer/Secretary and also heads up the Conservation Committee. Volunteering for a position can be very time consuming, and we are lucky that David steps up to the plate.

We have had two new appointments to the Advisory Committee this year. The first is Bonnie Keller. Bonnie is a Science Teacher for Fairfax County Public Schools, and she is the owner of VA Reptile Rescue. Bonnie's devotion to herpetofauna is exactly what we need in the VHS. Our most recent addition to the Advisory Committee is Mark Khosravi. Mark is also a Science Teacher as well as a Naturalist for Fairfax County Park Authority. His experience will be a valuable asset. Shortly before our fall meeting, we decided to create the new position of Advisory Committee Chair in the Advisory Committee. The Chair will be included on all emails sent by the President and Vice President, and will be in a great position if they ever decide to run for office. I am very happy to announce that John Orr will be the first Advisory Committee Chair. John is a PhD student in Environmental Science at George Mason University. He has worked as a science teacher and is currently employed by Fairfax County Health Department's Disease Carrying Insects Program as a Tick and Mosquito Biologist.

After many years of valuable service, Patti Crane has decided to step down from running the CaféPress store. Kelly Geer has volunteered to step up to the plate. Kelly has been an active member of the VHS for many years. She began her career as an Endangered Species Biologist

President's Corner

for the U.S. Fish and Wildlife Service more than twenty years ago. Kelly has a degree in Marketing Management and currently works as the Assistant Web Manager in the U.S. Fish and Wildlife Service's Headquarters Office.

Jason Gibson has volunteered to expand the role of the HerpBlitz committee. The committee will produce a standardized data collection and report template and will also be tasked with writing up survey reports when no one else volunteers. The committee has been renamed the Survey Committee. This was something I was looking into when pondering the presidency, and I am glad it is already underway.

Last, but not least, I am honored to say that I have been elected President of the Virginia Herpetological Society. I had the pleasure of serving as Vice President for the last two years, and I look forward to leading with the help of all the VHS's great volunteers. I currently work as the Assistant Customer Service Center Manager for Virginia State Parks. My love for our native herpetofauna has spread into my career mainly through my involvement with the park's Facebook page. I have been responsible for all the critter questions, and have used this as a weekly teaching opportunity for our almost 90,000 followers.

Over the next two years, I have multiple goals I wish to accomplish. Firstly, I would like to see Catesbeiana become publically searchable on the web. I plan on working closely with Paul Sattler and John White to see what is needed to make this possible. Catesbeiana is a valuable resource and I would love to see it more commonly referenced in studies and papers.

During my time as Vice President, Kory and I had looked into safety protocols to help prevent the spread of diseases between survey sites. With the confirmation of Snake Fungal Disease and Chytridiomycosis in Virginia, it is very important that we do everything we can to prevent the further spread of these diseases by human interaction. I would like to appoint a couple people to oversee disinfection protocols at our surveys. By disinfecting our equipment and shoes, we will reduce the chances of spreading these catastrophic diseases.

I would like to get all officers in the VHS to create documents that detail their position's duties. These documents would have annual tasks that must be completed as well as details on performing them. This will greatly aid in the transition between administrations.

Facebook has become a major information source over the years, and I would like for us to take greater advantage of this trend. John and Kory have done a great job with the page so far, and I would like to expand our interactions and presence on the platform. I will look into the feasibility of having various contests for small prizes throughout the year and creating easily sharable memes about herps. This will increase exposure of the VHS as well as help spread correct information about reptiles and amphibians. There is so much misinformation being spread that we must try to attack it head-on. I would also like to work with John White to get pictures of the larval stages of all our native salamanders added to the VHS website. I personally consider our website to be the best of its kind, and I think many others would agree. Adding to the wealth of information already there will make it even more valuable to anyone coming to learn about our native herps.

This list of goals is by no means complete and will expand throughout the next two years. If you have an idea, please do not hesitate to contact me. I am really looking forward to my time as President, and I would like to thank everyone for giving me this opportunity.

Michael Salotti
president@vaherpsociety.com



Incoming President Mike Salotti (left) thanks outgoing President Kory Steelet (right) for two years of service, at the 2015 Fall Meeting.

The Fall Meeting of the Virginia Herpetological Society was held at VCU's Environmental Facility, the Rice Center. Papers were presented by:

Mike Clifford – New Locality Records for *Agkistrodon piscivorus* and *Crotalis horridus* in Virginia's Southern Piedmont.

David McLeod – Diversity in a Group of Southeast Asian Fanged Frogs.

J.D. Kleopfer – The State of Herpetology in Virginia.

Cassandra Cook – Potential Threats to Diamondback Terrapin Nesting Ecology Caused by the invasive Reed *Phragmites australis*.

Min Jae Kim – Preliminary Data on the Diet of an Invasive Fish in Northern Virginia: Are Snakeheads Eating Native Frogs?

Virginia Herpetological Society
Spring Annual Business Meeting-Westmoreland State Park
Minutes of Meeting
8 May 2015

Kory Steele, President of the Virginia Herpetological Society (VHS), opened the meeting shortly after 18:13 hr. EDT and provided the agenda for the meeting.

Old Business

There were no remaining old business items to discuss.

Committee Reports

Newsletter Report

Co-Editors Susan Watson and Joellen Welch were unable to attend the business meeting. Kory Steele indicated the VHS Newsletter would be published 3 times annually with a little less detail contained in the first 2015 Newsletter. In this way there will be more frequent communication with VHS membership. The current plan is to publish the next Newsletter prior to the Herp Blitz.

Catesbeiana

Paul Sattler, Editor of Catesbeiana, reported that the next issue of Catesbeiana would be sent out in two to three weeks

Treasurer

Dave Perry, VHS Treasurer/Secretary reported that the VHS cash balance on May 08 was \$11,932.54. Four research grants and one signage project had been fully funded. However, one check for \$107.15 related to expenses for the Montclair Earth Day event had yet to clear the VHS bank account. On the whole VHS had positive cash flow >\$400 in the period since the October 18, 2014 Treasurer Report and could fund an additional project or spending. VHS 2015 annual and lifetime membership totaled 204.

Conservation

Dave Perry, VHS Conservation Chair, mentioned there was an open 2015 VHS invitation to VDGIF to survey Cavalier WMA for canebrake rattlesnakes. J.D. Kleopfer, herpetologist employed by VDGIF, had not yet committed to any new surveys at Cavalier WMA.

Research

Mike Meyer, VHS Research Chairperson, did not attend the meeting and was unable to provide a written report prior to the meeting.

Education

Mike Clifford, Education Committee Chairperson, could not attend the meeting and was unable provide a written report prior to the meeting.

HerpBlitz

Jason Gibson, HerpBlitz Chairperson, reported that the 2015 HerpBlitz was scheduled for June 13-14 at Breaks Interstate Park. Eleven survey volunteers have already registered. At this point there was some discussion about potential future spring and HerpBlitz survey sites including The Great Dismal Swamp, Back Bay NWR/Cape Fear State Park and First Landing State Park.

Web Store

There were no updates to report.

Advisory Committee

There were no updates to report.

Website

John White, VHS Webmaster, reported that the VHS website had experienced a major hacking event and was temporarily down. Restoration was underway.

New Business

Kory Steele introduced some new business topics.

Fall Elections/Annual Meeting

Kory reminded everyone about elections for VHS officers (President, Vice President and Treasurer) that would be held in the fall. The annual meeting site had not yet been selected. Leading candidates include Three Lakes Nature Center (site of the 2014 annual meeting) and the VDGIF Richmond office which evidently has expanded since the 2013 annual meeting was held there.

Catesbeiana Archived Data Retrieval

Jason Gibson raised the topic of improving Catesbeiana archived data and articles retrieval. Recently Jason had access to an atlas "Frogs of North America" which contained some 4,500 scientific references but did not include a single reference from any of the past issues of Catesbeiana. Jason proposed that we develop a program to move archived Catesbeiana articles to a software program like Google Scholar to allow easy access to the valuable field research that VHS generates for future use by scientists, researchers and publications. There was unanimous agreement with this proposal. The possibility of VHS offering to manage the VDGIF herp data base was also discussed.

There being no other new business to discuss, the meeting was adjourned by Kory Steele at 18:41 hr. EDT.

David A. Perry
VHS Treasurer/Secretary

**Virginia Herpetological Society
Treasurer's Report
September 3, 2015**

Previous Report Balance – May 17, 2015 \$11,851.32

Net Receipts (excludes PayPal fees):

May Dues (from May 18)	\$ 14.37
May Donation	\$100.00
June Dues	\$ 87.26
July Dues	\$ 58.11
July Donation	\$ 703.00
August Dues	\$ 94.37
Amazon Smile Credit	\$ 5.36
September Dues (through September 3)	\$21.89

Total Net Receipts \$1,084.36

Disbursements:

Catesbeiana Postage	\$25.58
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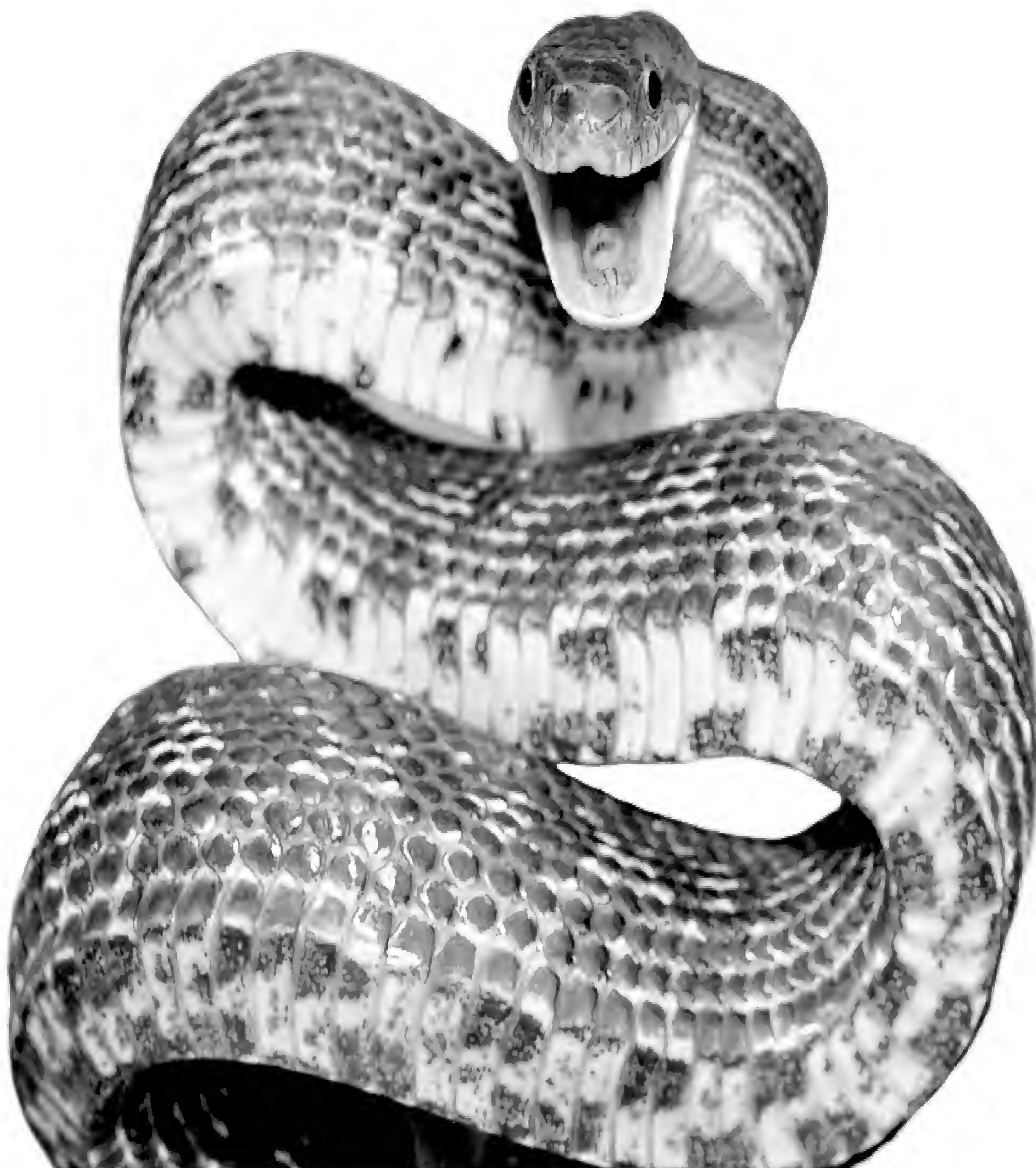
Current Balance –September 3, 2015 \$12,910.10

VHS Membership: 229

David Perry
VHS Secretary/Treasurer

Literature of interest to Virginia Herpetologists:

- Blackburn, M. et al. 2015. First report of Ransvirus and Batrachochytrium dendrobatidis in Green Salamanders (*Aneides aeneus*) from Virginia, USA. *Herpetological Review* 46(3): 357-361.
- Brazeau, D. et al. 2015. Comparing common five-lined skink (*Plestiodon fasciatus*) diet among populations and time. *Herpetological Review* 46(3):331-336.
- Tupper, T.A. 2015. Natural History Notes, Cannibalism in *Lithobates sylvaticus*. *Herpetological Review* 46(3):414.
- Wassersug, R. 2015. Book Review: Handbook of larval amphibians of the United States and Canada. *Herpetological Review* 46(3):459-461.



Field Notes

The field notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. All field notes must include a brief statement explaining the significance of the record (e.g., new county record) or observation (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the field note contains information on a new county (or state) record, verification is required in the form of a voucher specimen deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a photograph (print, slide, or digital image) **or recording** (digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult the VHS website (County/City Herp Lists) to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

PHOTOGRAPHS

High contrast photographs (digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Published photographs will be deposited in the Virginia Herpetological Society archives.

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